

ABSTRACT OF THE DISCLOSURE

A method of globally analyzing intersections between objects in computer animation includes providing objects represented by meshes, with each of the meshes being formed by a set of vertices, where a set of pairs of vertices defines a set of edges of the mesh. All edges of the meshes are checked to determine if the edges intersect with any of the meshes. An intersection path, formed by the intersection of the meshes, is traced and which vertices that are contained within the intersection path are determined. A polarity of each of the contained vertices is set to indicate that those vertices are contained within the intersection path. The analysis forms the backbone of a collision-response algorithm for unoriented objects such as cloth that is better than previous existing algorithms. The analysis also allows objects to be simulated even when hand-animated elements of the simulation have extreme amounts of interpenetration. Finally, simply displaying the nature and extent of the data found from the analysis provides extremely useful feedback to an end-user.